



**NOAA
FISHERIES**

**Alaska
Fisheries
Science
Center**

Recruitment Processes Alliance: Zooplankton, and larval & juvenile fish surveys

Matt Wilson

**Ecosystem Science Review
Juneau, Alaska
May 2-6, 2016**

Presentation outline

- I. What is the RPA Program?
- II. Strategies to obtain ecosystem data
 - Sampling gear
 - Study regions
- III. Status of ecosystem data
- IV. Communication and use of ecosystem data

I. What is the RPA?

The Recruitment Processes Alliance was formed in 2011 among NOAA programs to enhance ecosystem research.

- Primary goal is to provide mechanistic understanding of the factors that influence recruitment of walleye pollock, Pacific cod, arrowtooth flounder, chinook salmon and chum salmon, focusing on factors influencing the first year of ocean life.
- Members
 - NMFS, Alaska Fisheries Science Center
 - Ecosystem Monitoring & Assessment Program (Juneau)
 - Recruitment Energetics and Coastal Assessment Program (Juneau)
 - Status of Stocks and Multispecies Assessments (Seattle)
 - Resource Ecology and Ecosystem Modeling Task (Seattle)
 - Recruitment Processes Program (Seattle)
 - OAR, Pacific Marine Environmental Laboratory (Seattle)

II. Strategies to obtain ecosystem data

Use various gear aboard NOAA ships and charter vessels to conduct process-oriented field studies and monitor zooplankton and larval & juvenile fishes in 3 large marine ecosystems:

- Arctic,
- Bering Sea,
- Gulf of Alaska

Sampling gear

A variety of plankton nets and small-mesh trawls are used to collect zooplankton and larval & juvenile fishes.



Bongo



CalVET



Beam trawl



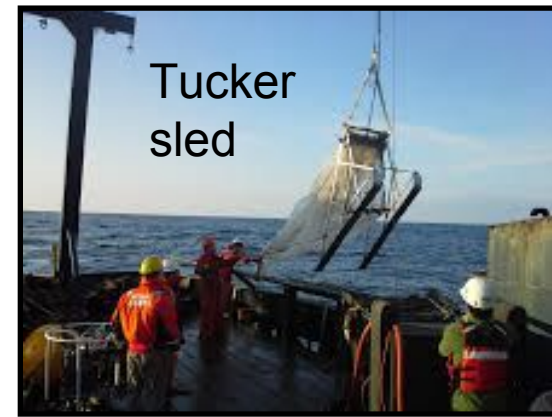
Tucker



Cantrawl

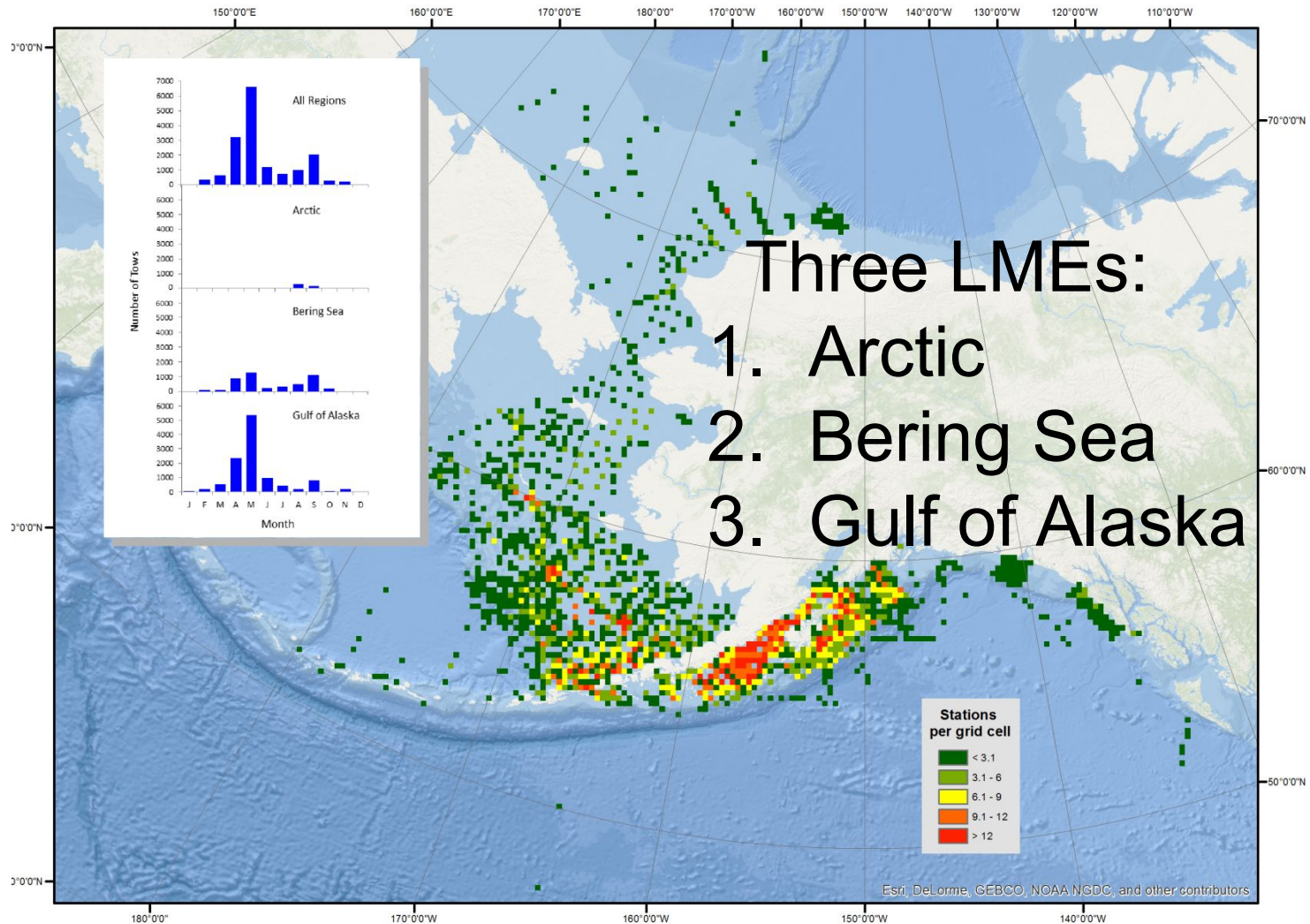


Stauffer trawl

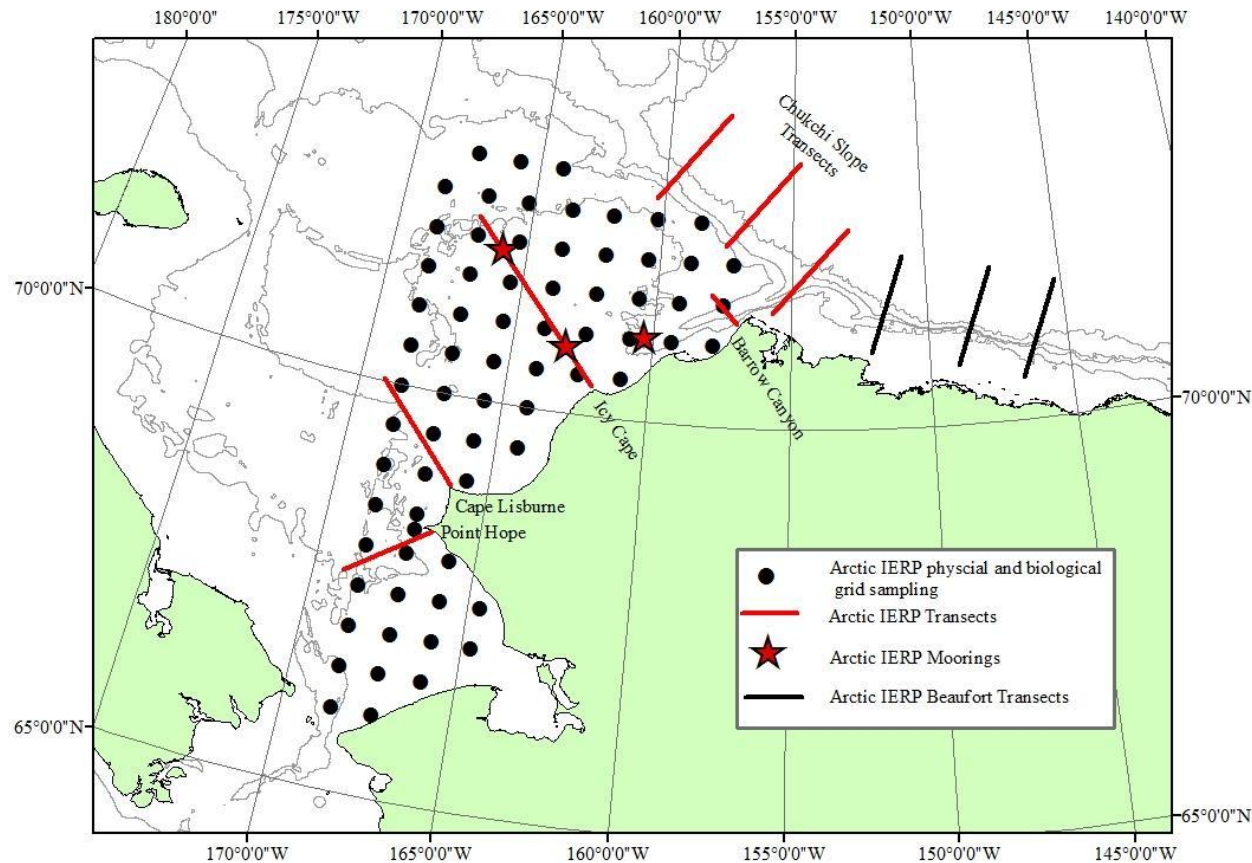


Tucker sled

Study regions



1a. Arctic: Integrated Eco. Res. Plan



Grid

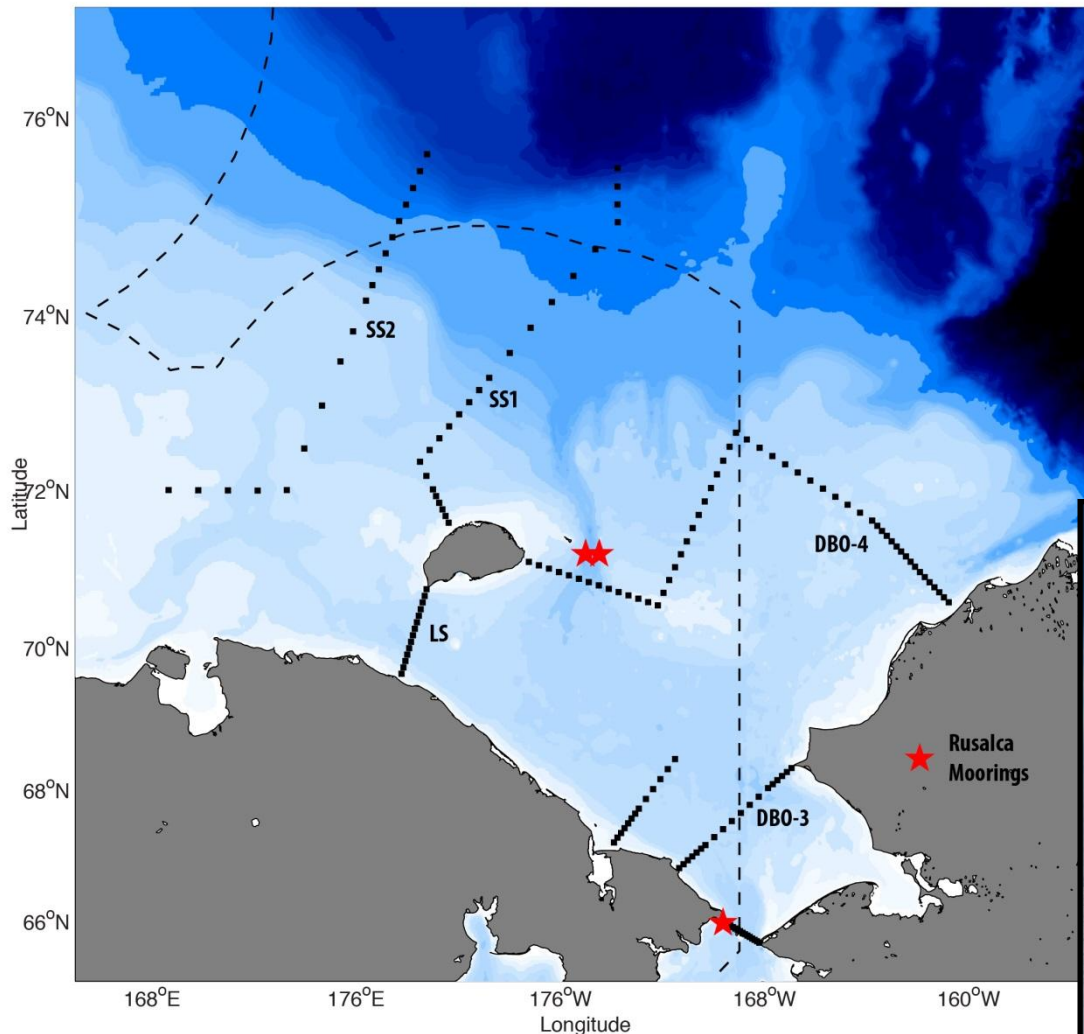
Eco. Integrated Survey
Sep 2011 & 2013, 3 weeks
physics, zoop., & fish

Transects

CHAOZ-X, ArcWEST
Sep-Oct 2010-'15
3 weeks, physics,
zoop., & whales



1b. Arctic: Russian-American Long-Term Census of the Arctic (RUSALCA)



2004-present
+5 years(?)
6 weeks
physics & zoop.

RUSALCA
Russian-American Long-term Census of the Arctic

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

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About

About Rusalca
RUSALCA MOU
Environmental Atlas
Russian RUSALCA site

About

RUSALCA Introduction

Kathleen Crane
U.S. Mission Coordinator, Arctic Research Office NOAA

July 23, 2004 marked an historic day in Arctic research and exploration as well as Russian-U.S. relations. On this date the Russian research ship, the Professor Khromov, left Vladivostok, Russia packed with U.S. and Russian, funded scientists to begin a 45-day collaborative journey of exploration and research in the Arctic.

This map traces the voyage of the Professor Khromov, a Russian research vessel engaged in the RUSALCA

2a. Bering Sea: spring

moorings

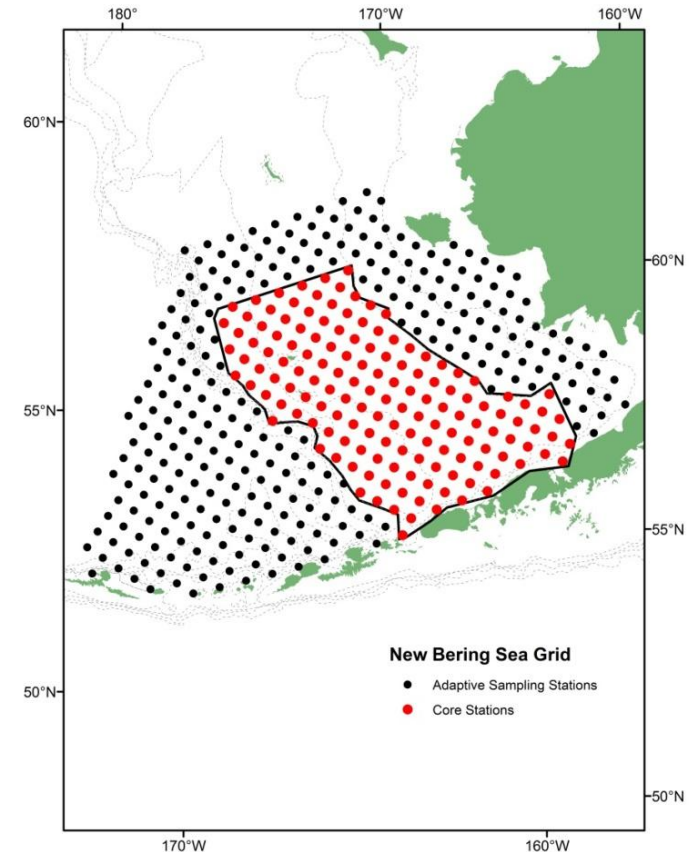
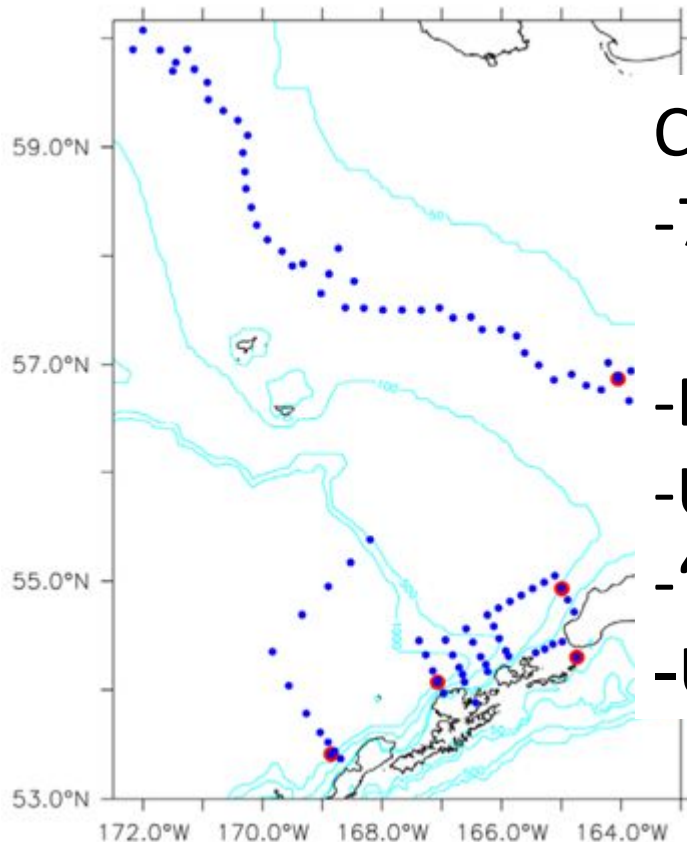
May, ≥ 1995 , 2 wks
physics & zooplankton



larval fishes

May-Jun, ≥ 2001 , even
yrs, 2 wks, phys. & zoop.

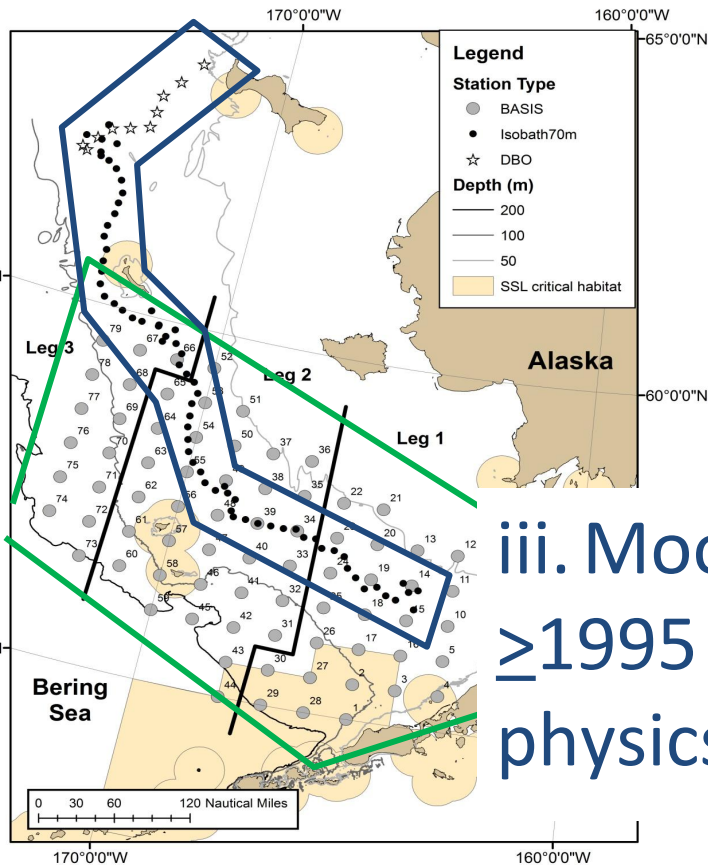
Components:
-70-m &
moorings
-Dis. Bio. Obs.
-Unimak Box
-"Dog leg"
-Unimak Canyon



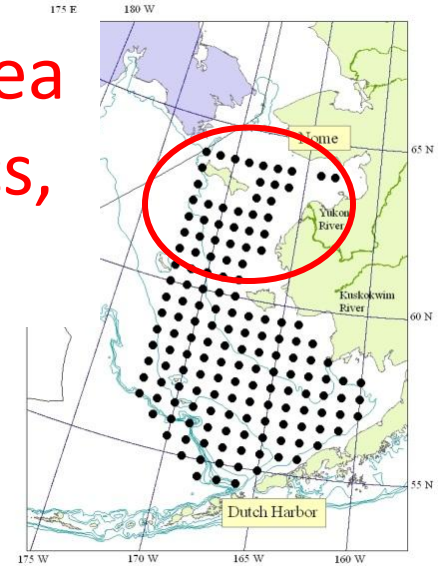
2b. Bering Sea: summer/fall

Aug-Oct, few weeks per project cruise

i. BASIS, ≥ 2002
now even years
phys., zoop., & neritic

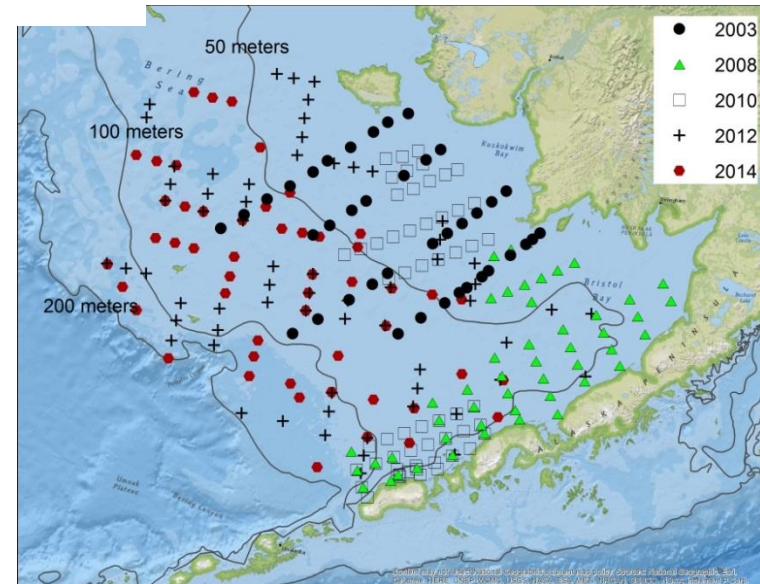


ii. N. Bering Sea
 ≥ 2002 , physics,
zoop., & fish



and benthic
(≥ 2008) fishes

iii. Moorings, etc
 ≥ 1995
physics, zoop.

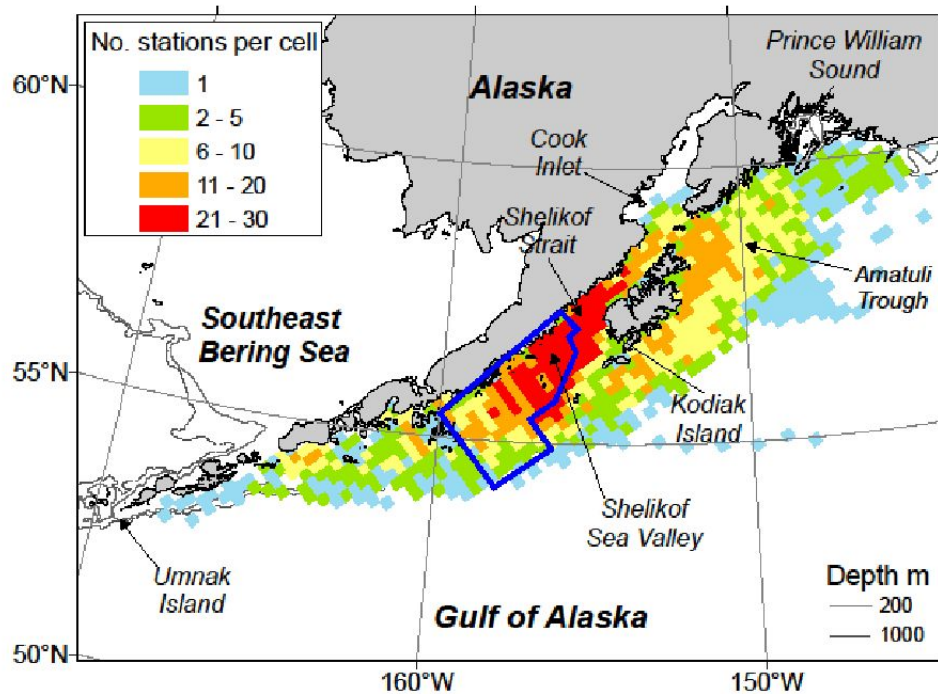


3a. Gulf of Alaska: spring



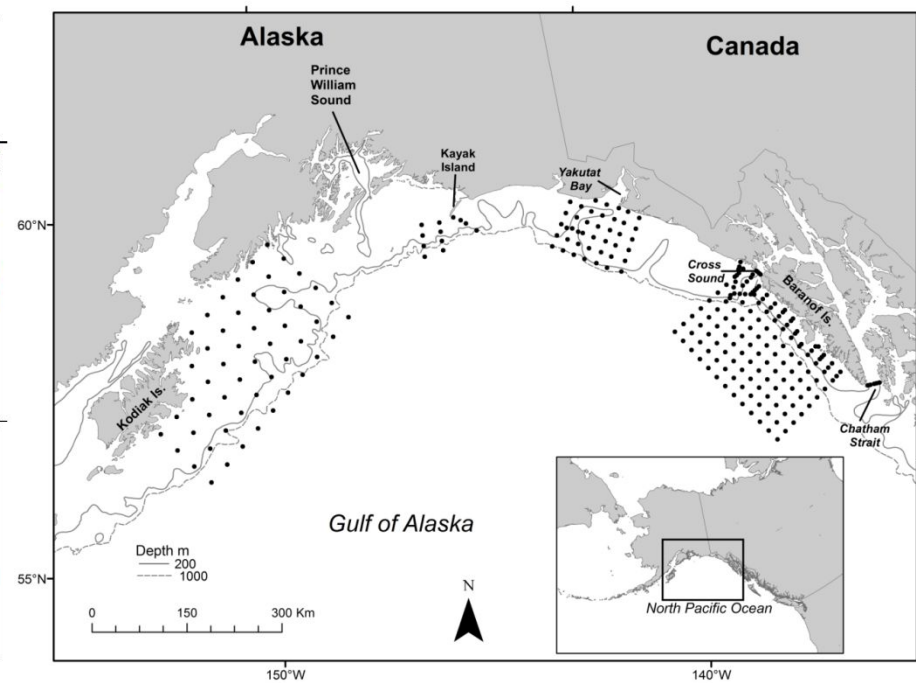
western & central

May-Jun \geq 1970's
odd yrs, 2 wks, 10 nm
apart, physics & zoop.



central & eastern

Apr-Aug 2011 & 2013
2 weeks
physics & zoop.



3b. Gulf of Alaska: summer/fall



western & central

Aug-Oct ≥ 2000

odd years, 4 wks

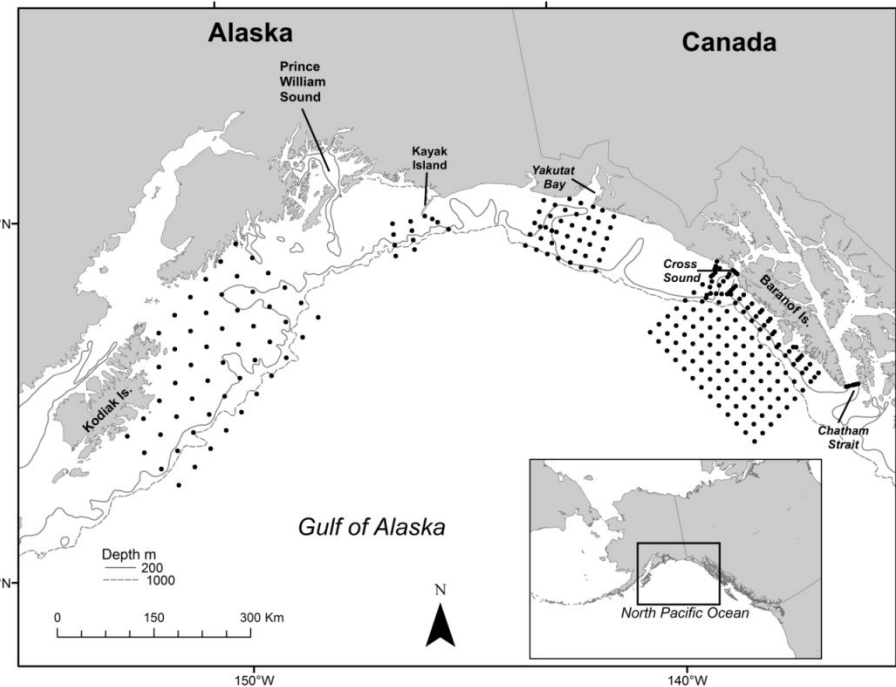
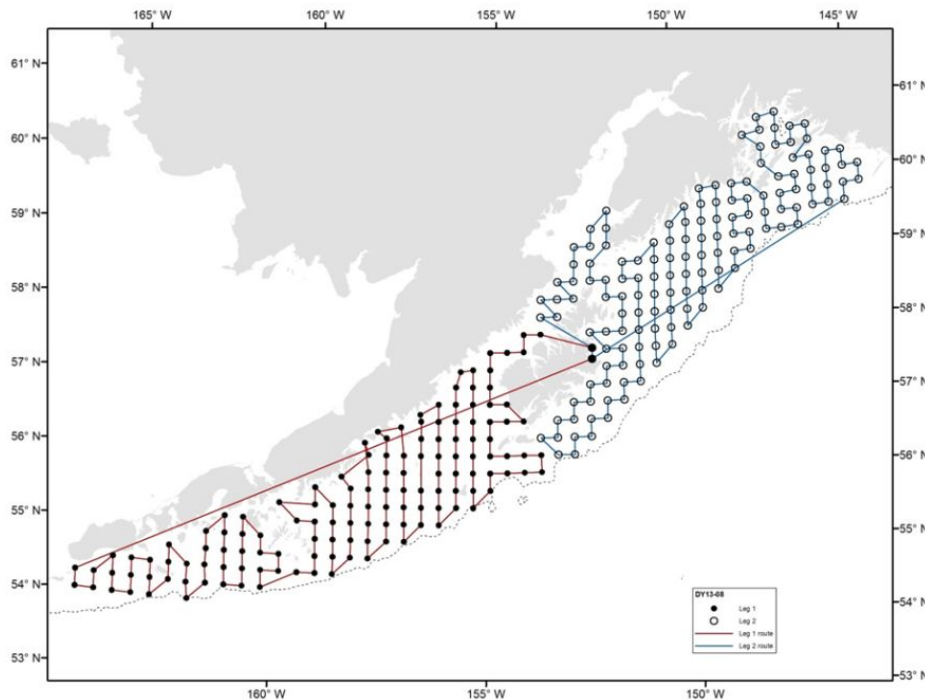
14 nm apart, physics,
zooplankton, & fish

central & eastern

Jul-Aug & Sep-Oct ≥ 2011

odd years after 2017

4 weeks, physics,
zooplankton, & fish



III. Status of ecosystem data

- Data management
- Web accessibility

Data management

Master COD

EcoDAAT
Cruise Search Results
ALASKA FISHERIES SCIENCE CENTER
RESOURCE ASSESSMENT AND CONSERVATION ENGINEERING
Ichthyoplankton Cruise Database
[home | search | gear dict. | species dict. | acronym dict. | sample dict.]

FOCI cruise id: BE13-03 gear (mesh in um) and no. samples (status): 60BON (505) 38 (Database)
cruise id: BE13-03
cruise dates: 12 September - 24 September, 2013 top 3 species found by gear and ichthyoplankton stage in order of dominance: Not available at this time.
vessel name: Bristol Explorer
chief scientist: Jim Murphy
scientist in charge of plankton collection:
geographic area: Chukchi Sea North of Bering Sea

EcoDAAT.db3

EcoDAAT
EcoFOCI Data Portal
Search Tools ? Help
Time Slider is used for Data Visualization only
Info Logout
Layers Oceanographic Imagery Gray
Data Extraction
Data Query and Selection
Select FOCI Data Group: ECO SIMPLE RECORDS
Choose Sample Type: Zooplankton
Chosen: Gear Abbreviation: Purpose: NEI: Max Bottom Depth(m): 1400 Max Depth (m): 1400 Max Gear Depth (m): 1400 Sample ID: Station Name: Primary Net: Define Time Range Search Select Fields Clear
*Results will be shown on map and in table

Click the Search tool for Data Extraction and Selection. Use the Time Slider to filter the map data time range.
Search Data Extraction
Time Slider: Feb 5, 1999 at 1:05 AM
Layers Oceanographic Imagery Gray
Map Time: Jan 26, 1997 - May 21, 2003

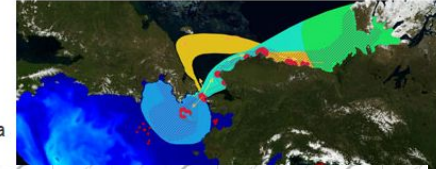
EcoDAAT.db3
on & the eastern Science ducted the eastern Bering Sea and oil and gas characteristics were the food webs, Sea and

EcoDAAT.db3
NB-R04
NB-R03
NB-R02
NB-R01
NB-R00
NB-S00
NB-S01
NB-S02

Web access

Ocean Data Explorer BETA

This portal contains scientific and management information including real-time sensor feeds, operational oceanographic and atmospheric models, satellite observations and GIS data sets that describe the biological, chemical and physical characteristics of Alaska and its surrounding waters.



COPEPOD

The Coastal & Oceanic Plankton Ecology, Production, & Observation Database

NMFS Office of Science & Technology | Marine Ecosystem Division

COPEPOD: The Global Plankton Database

Sort list:
 | Alphabetically | Phylogenetically |
Choose taxon to view
 - Agonopsis vulsa
 - Albatrossia pectoralis
 - Alepisaurus feroc
 - Anmodytes hexapterus
 - Anarhichas orientalis
 - Anarhichas ovalatus

Ichthyoplankton Information System

Alaska Fisheries Science Center : Resource Assessment and Conservation Engineering

| home | character search | taxon search | pdf report | citations | species dict | links | contact |

Scorpaeniformes - Anoplopomatidae

Anoplopoma fimbria (Sablefish)

Illustration | Meristics | Life History | ELH Desor. | Distribution | Footnotes

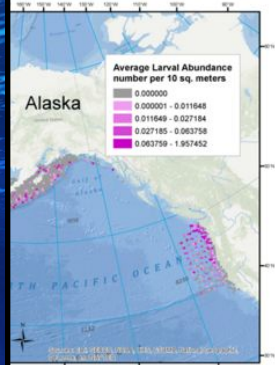
LarvalBase | FishBase | Univ. Washington Data

lag time of five years is applied to distributional data. e 2015 and includes 1972 - 2009 distributional data.

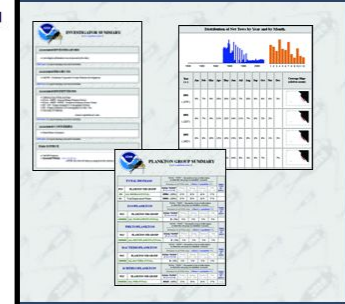
oplopoma fimbria distribution: Larvae

o to an interactive map.

Anoplopomatidae



Production Database



roduction & Observation Database (COPEPOD) is an composition data compiled from a global assortment of cruises, the zooplankton and phytoplankton data content ranges from process studies, each accessible via a variety of search options, content summaries. COPEPOD also offers a variety of products at regional, basin, and global scales.

Administration | U.S. Department of Commerce

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PHOTO TAKEN BY Ram Raghav

WHAT'S NEW The latest and greatest research from all NPRB projects

UPCOMING AT NPRB

Spring 2016 Science Panel Meeting March 28, 2016 - April 1, 2016 Seattle, WA

Spring 2016 Advisory Panel Meeting April 25, 2016 - April 28, 2016 Anchorage, AK

Spring 2016 Board Meeting May 2, 2016 - May 6, 2016 Anchorage, AK

Fall 2016 Science Panel Meeting August 22, 2016 - August 26, 2016 Anchorage, AK

Fall 2016 Advisory Panel Meeting September 13, 2016 - September 15, 2016 Anchorage, AK

Fall 2016 Board Meeting September 19, 2016 - September 23, 2016 Sitka, AK

NPRB

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Feb 26, 2016

AMSS 2016: THE NUMBERS ARE IN!

With five excellent keynotes, almost 80 plenaries, and over 200 poster presentations, AMSS 2016 was another huge success!

Read More

Filed under: All NPRB News



Feb 8, 2016

CALLING ALL PHOTOGRAPHERS: DEADLINE APPROACHING SOON!

The 10th Annual Photo Contest deadline is drawing near. Submit your best photographs of Alaska's seascapes and marine life. The deadline to apply online is February 28, 2016. Professionals, amateurs, adult, and youth are all encouraged to apply. Each year, NPRB awards up to \$3,300 in cash prizes to the top finalists in adult and youth categories. Over the past decade, NPRB has received close to 1,500 entries for the Photo Contest. Let's make this year another great success!

For official contest rules and to apply visit: <http://www.nprb.org/nprb/annual-photo-contest/>

Read More

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Updated: June 2015

IV. Communication and use of ecosystem data

- Communication to managers, partners, stakeholders and the public
- Inclusion of ecosystem data into living marine resource management advice
- Peer-review of ecosystem-related science program and products

O cinema
 das Ciências Exatas

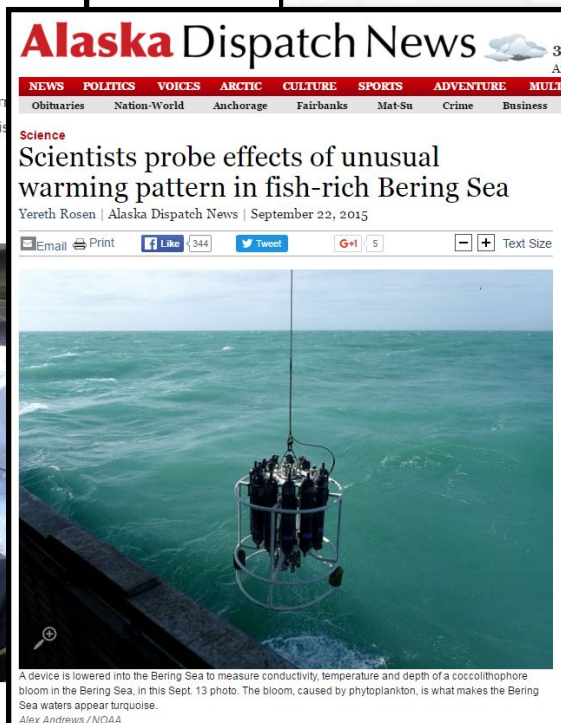
Communication to managers, partners, stakeholders and the public



On Tuesday researchers wrapped up a month-long cruise through the unusually warm waters of the Bering Sea. They're investigating how the second year of a warming pattern is affecting the ecosystem, including the nation's largest fishery, pollock.



(Alex Andrews/NOAA/ABL)



Inclusion of ecosystem data into management advice



Alaska Marine Ecosystem Considerations

Home Report Assessments Report Cards Hot Topics Links

The Ecosystem Considerations report is produced annually to compile and summarize information about the status of the Alaska Marine Ecosystem for the [North Pacific Fisheries Management Council](#), the scientific community and the public. The report includes ecosystem report cards, ecosystem assessments, and ecosystem and ecosystem-based management indicators for the Eastern Bering Sea (EBS), Aleutian Islands (AI), the Gulf of Alaska (GOA), and Arctic ecosystems.

Region	Assessment	Report Card	Hot Topics
Eastern Bering Sea	Assessment	Report Card	<ul style="list-style-type: none">Chum SalmonBird Sightings
Aleutian Islands	Assessment	Report Card	
Gulf of Alaska	Assessment	Report Card	<ul style="list-style-type: none">Too Warm?Age-0 PollockMarine Mammals
Arctic	Assessment		<ul style="list-style-type: none">Polar Bears

The screenshot shows a website titled "Alaska Marine Ecosystem Considerations". It has a navigation bar with links: Home, Report, Assessments, Report Cards, Hot Topics, and Links. Below the navigation bar is a paragraph explaining the report's purpose. At the bottom, there are four panels, each representing a different ecosystem: Eastern Bering Sea, Aleutian Islands, Gulf of Alaska, and Arctic. Each panel contains a list of links for "Assessment", "Report Card", and "Hot Topics". The Eastern Bering Sea and Gulf of Alaska panels have large black checkmarks next to them, indicating that data is included in management advice for these regions.

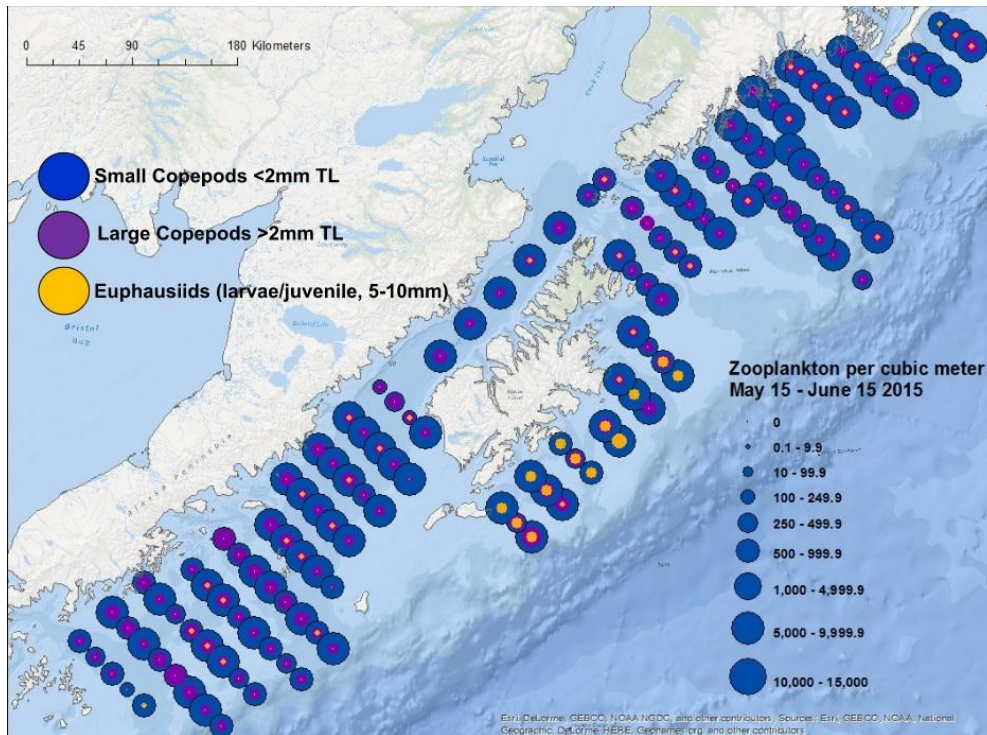
How are these inclusions decided?

Requested during the management process:

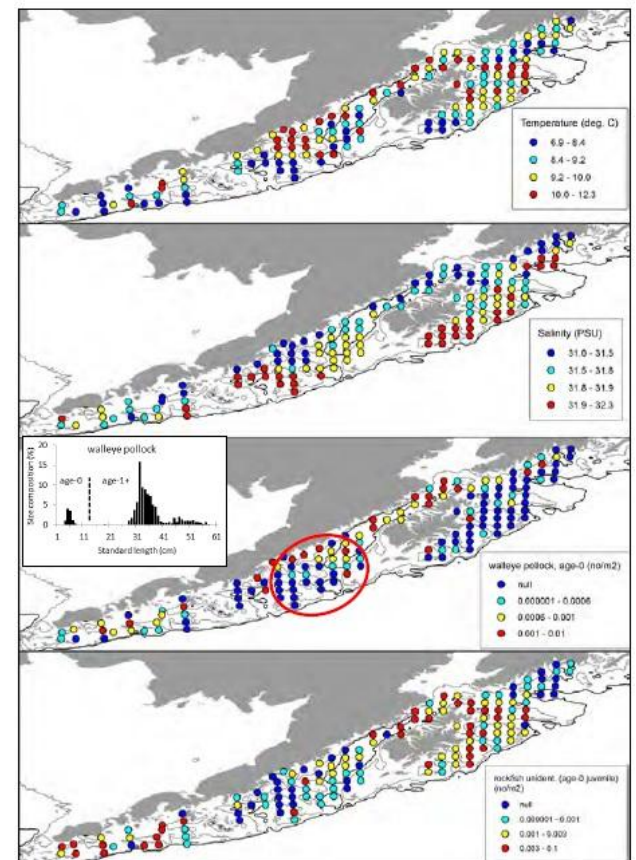
eg., rapid zoop assessment

Offered for consideration during the research process:

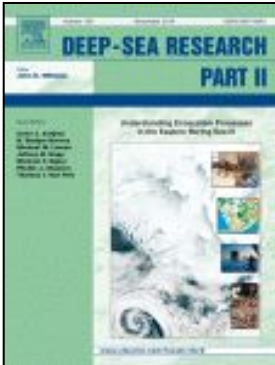
eg., 2015 “Blob” response



Ecosystem Considerations December 2015



Peer-review of ecosystem-related science program and products



Center for Independent Experts Review for the
Recruitment Processes Alliance Research in the Southeastern Bering
Sea

July 21 - 24, 2015

NOAA Western Regional Center
Alaska Fisheries Science Center
Building 4
Traynor Seminar Room (Rm 2076)
7600 Sand Point Way NE
Seattle, WA 98115

Expert Panel:

Dr. J Simmonds, UK
Dr. K Drinkwater, IMR, NO
Dr. P Fernandes, IBES, UK
Dr. T Smith, CSIRO, AU

